

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

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1. (Currently Amended) A method of winding a yarn in a plurality of superposed layers onto a cylindrical support (20) having a longitudinal axis (X) and fastened around a spindle (21) driven in a rotational movement, in which the yarn is wound by running over a yarn guide (34) which moves in a backward and forward motion (M) parallel to the axis (X) of the support and is controlled so as to form a bobbin having a shape with two frustoconical ends, said bobbin comprising a base cone (12) having a generatrix (L2) inclined at an acute angle (α) to the axis (X) and an unwind cone (13) having a generatrix (L3) inclined at an acute angle (β) to the axis (X), and a main body (11) which joins the two ends and has a frustoconical shape, said main body (11) comprising a generatrix (L1), an end section (11a) which forms a base [(12c)] (12a) of the cone (12), said base (12a) having a diameter D1 and an end section (11b) which forms a base (13a) of the cone (13), said base (13a) having a diameter D2, wherein D1 and D2 are different, said method of winding a yarn comprising,

governing the movement of the yarn guide with a first rule for forming a part of the base cone (12) wherein a last layer of yarn deposited according to said first rule going as far as the end (13b) of the unwind cone, and a second rule for terminating the base cone (12) while forming the main body (11) and the unwind cone (13), wherein a first layer of yarn deposited according to the second rule is parallel to a last layer of yarn deposited according to the first rule.

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2. (Previously Presented) The method according to Claim 1, wherein the first rule governing the movement of the yarn guide comprises establishing a plurality of backward and forward motions parallel to an x axis between an initial position (x_o) and a final position (x_z) said positions perpendicular to the support (20) and to each of the end sections (12b, 13b) of the bobbin, wherein each backward and forward motion comprises:

- a starting position (x_j), a first movement having an initial position (x_o) and a final position (x_z), wherein said starting position for a movement following the initial movement or a movement subsequent to the initial movement is to the rear of the starting position of a previous movement and in front of the final position (x_z), a position for the last movement is defined by the diameter D1 of the base cone (12),

- an intermediate position (x_i) for reversal of the yarn guide, wherein an intermediate position for a movement is always to the rear of an intermediate position for a previous movement and is to the front of the final position (x_z), and

- an ending position (x_{j+1}) which is a starting position for the subsequent movement wherein a last intermediate position is the final position (x_z) and the last movement does not cause a reversal.

3. (Previously Presented) The method according to Claim 2, wherein the second rule governing the movement of the yarn guide comprises executing backward and forward motions parallel to the axis (X), between an initial position, said initial position the final position (x_z) of the yarn guide according to the first rule and a terminal position (x_t) between the final position (x_z) according to the first rule, defined by the diameter D2 of the unwind cone (13), and the starting position for the last movement according to the first rule, each backward and forward motion comprising:

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- a starting position (x_k), wherein a position of the first movement is the final position (x_z) according to the first rule, and a position for a subsequent movement is to the rear of the previous movement,

- an intermediate position (x_m) for reversal of the yarn guide, wherein an intermediate position for the first movement is an ending position corresponding to a position of reversal of a movement at the final position (x_z) according to the first rule, and

- an ending position (x_{k+1}) wherein said ending position is a starting position for the following movement,

- the starting and ending positions for a movement always in front of a position for a previous movement to shorten a travel of each movement.

4. (Previously Presented) The method according to Claim 2, wherein a plurality of successive starting positions (x_j) according to the first rule are separated by an equal distance (δ).

5. (Previously Presented) The method according to Claim 2, wherein a plurality of successive intermediate reversal positions (x_i) according to the first rule are defined by the equation $x_i = x_0 + i\Delta$, where Δ is a positive constant which depends on a slope to be given to the generatrix (L1) of the main body (11), and i varies from 0 to Z , where Z is a non-zero integer.

6. (Previously Presented) The method according to Claim 3, wherein a plurality of successive starting positions (x_k) according to the second rule are separated by an equal distance (δ').

7. (Previously Presented) The method according to Claim 3, wherein a plurality of successive intermediate reversal positions (x_m) according to the second rule are spaced

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apart by a distance (δ), said distance the same as a distance separating the plurality of successive starting positions (x_j) according to the first rule.

8. (Previously Presented) The method according to Claim 1, wherein the yarn guide (34) is moved concomitantly with a motion (M) parallel to the axis (X) in a coplanar motion (N) perpendicular to the axis (X) so that a resulting motion is parallel to the generatrix (L1) of the main body (11).

9. (Previously Presented) The method according to Claim 8, wherein a plurality of motions parallel (M) and perpendicular (N) to the axis (X) of the yarn guide (34) is produced by an electronic drive device (36).

10. (Previously Presented) The method according to Claim 8, wherein the yarn guide (34) is moved by running along mechanical guiding means placed parallel to the generatrix (L1) of the main body (11) being formed.

11. (Currently Amended) The method according to Claim 1, for which the yarn guide (34) ~~consists of~~ comprises a cam, wherein the speed of rotation of the cam ~~can be~~ is varied.

12. (Currently Amended) The method according to Claim 1, wherein a speed of rotation of the spindle (21) ~~can be~~ is varied.

13. (Currently Amended) The method according to Claim 1, wherein a speed of movement of the yarn guide parallel to the axis (X) ~~can be~~ is varied.

14. (Cancelled).

15. (Currently Amended) A frustoconical bobbin obtained by the method according to Claim 1, wherein an angle of inclination (α) of the generatrix (L2) of the base cone (12) is between 40° and 75°.

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16. (Currently Amended) A frustoconical bobbin obtained by the method according to Claim 1, wherein the angle of inclination (β) of the generatrix (L3) of the unwind cone (13) is between 30° and 60°.

17. (Previously Presented) The frustoconical bobbin according to Claim 15, wherein the yarn has a waviness (52) to allow two coils with two superposed layers to intersect at a crossover angle (γ).

18. (Previously Presented) The frustoconical bobbin according to Claim 17, wherein the crossover angle (γ) is between 0.5° and 6°.

19. (Previously Presented) The frustoconical bobbin according to Claim 15, wherein said bobbin has a length, measured between the two end bases (12b, 13b) of the base and unwind cones between 150 mm and 500 mm.

20. (Currently Amended) The method as claimed in Claim 1, ~~wherein the yarn is a continuous yarn obtained by~~ comprising collecting a multiplicity of glass filaments formed from a plurality of streams of molten glass wherein said streams of molten glass emanate from a plurality of orifices of a bushing and ~~run along a yarn guide~~ combing the glass filaments into said yarn.
